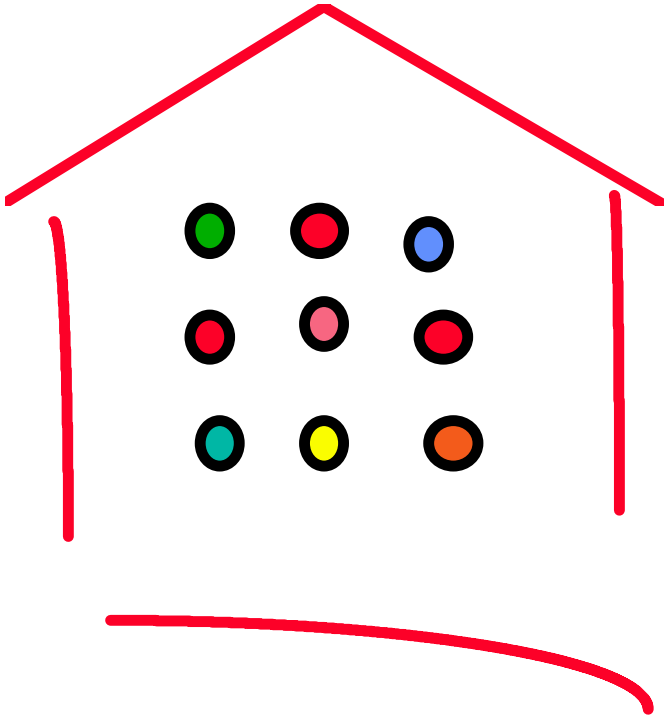
The Data Warehouse



If you build it will they come?

Presented By: Steven Jackson, DSDC-TDB
Donna Ingle, DSDC-MPO

NEW TECHNOLOGY, NEW BUZZ WORDS

DSS

MDDB

DATA WAREHOUSE

OLCP

Slice and Dice

EIS

OLTP

SMP

MPP

MOLAP

VLDB

ROLAP

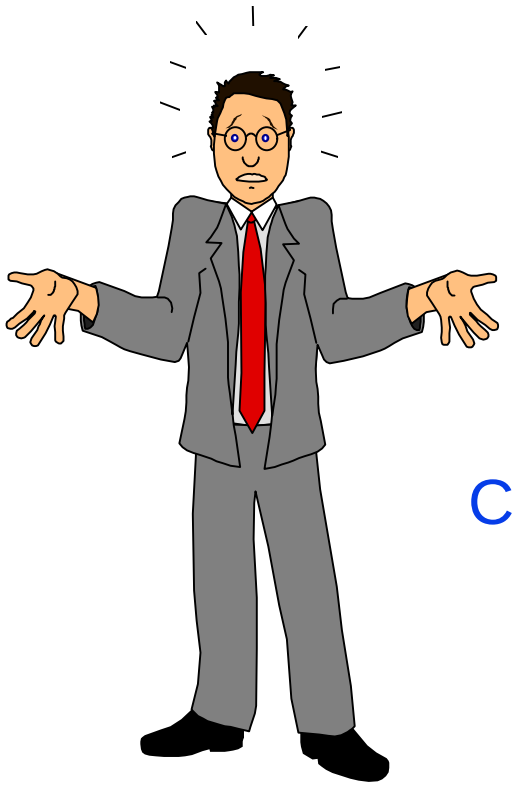
CUBE

DATA MART

OLAP

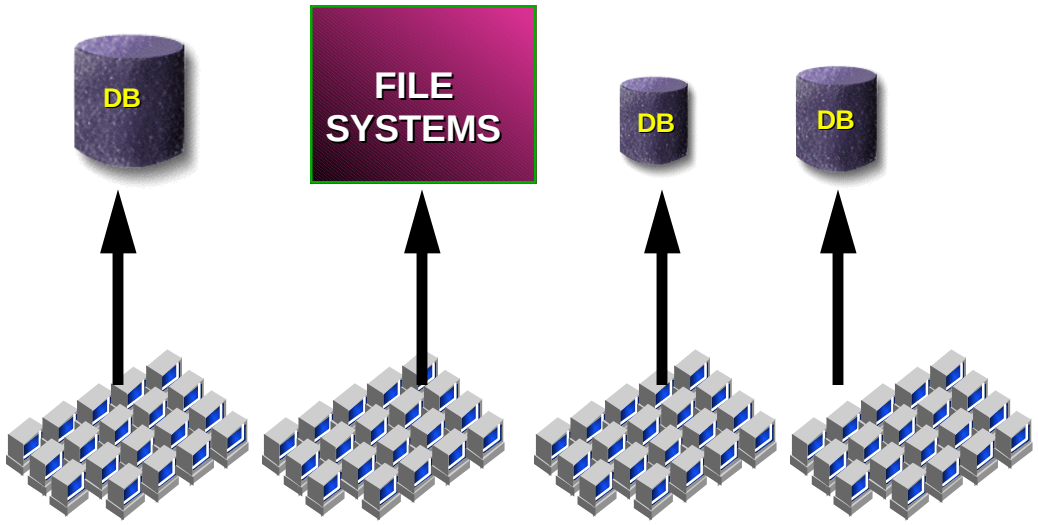
Drill Down

Star Schema



Traditional Transactional Systems

OnLine Transaction Processing (OLTP)

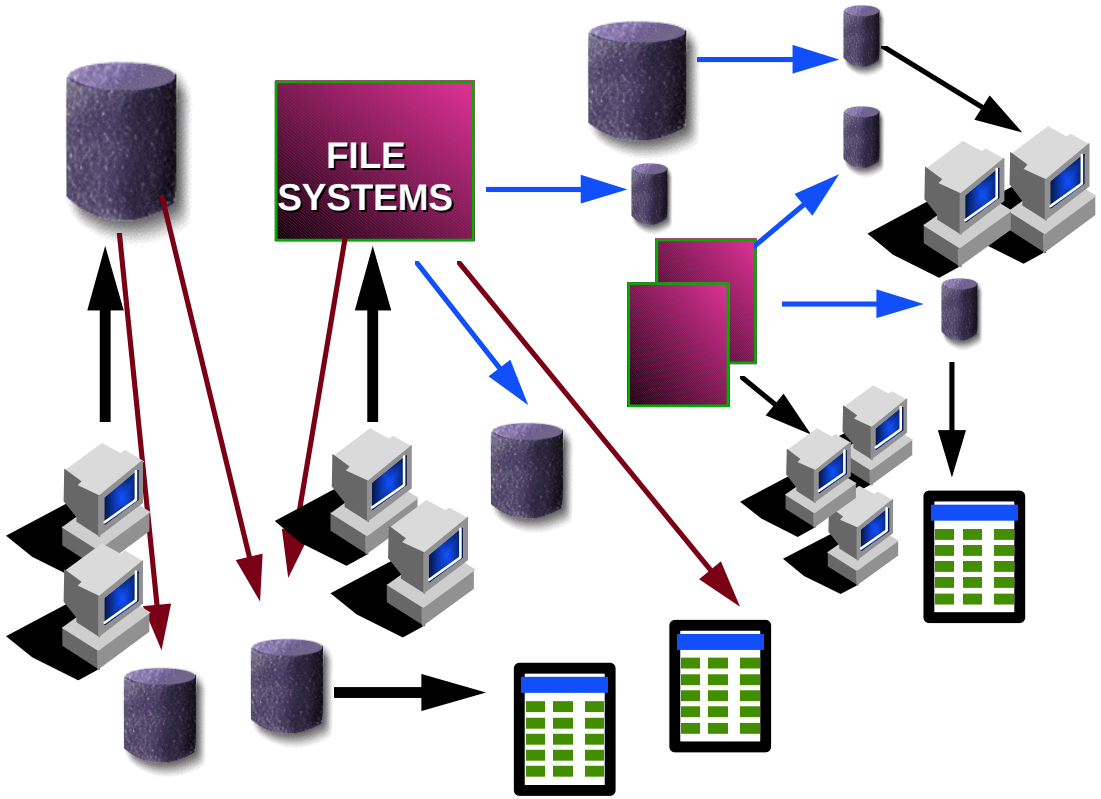


- *Rapidly Changing Data*
- *Ad hoc not feasible*
- *Dispersed Data*
- *Transactionally Optimized*
- *No history, No Analysis*
- *Unrecognizable Data*
- *Inflexible Architecture*
- *Unacceptable Response*

Insert **an order for widgets**
Update **an airline reservation**
Remove **a vendors' balance**

Traditional Transactional Systems

Decision Support Systems (DSS)



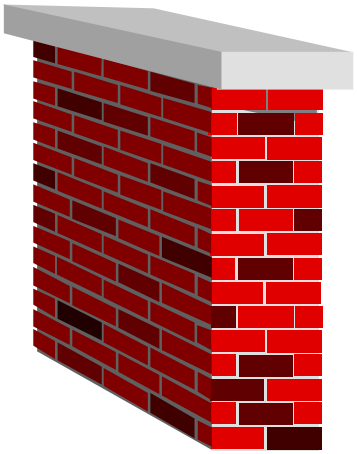
- *Unreliable Data*
- *Analytics not feasible*
- *Dispersed Data Stores*
- *Transactionally Designed*
- *Unrecognizable Data*
- *Inflexible Architecture*
- *Unacceptable Response*

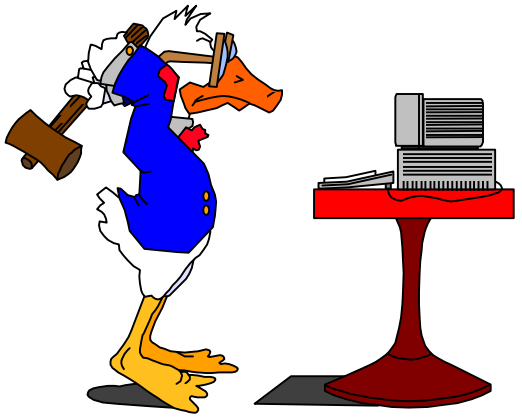
Reports and Queries

EXTRACTS

Traditional Systems
Data Locked and Blocked

Payroll
Procurement
Personnel



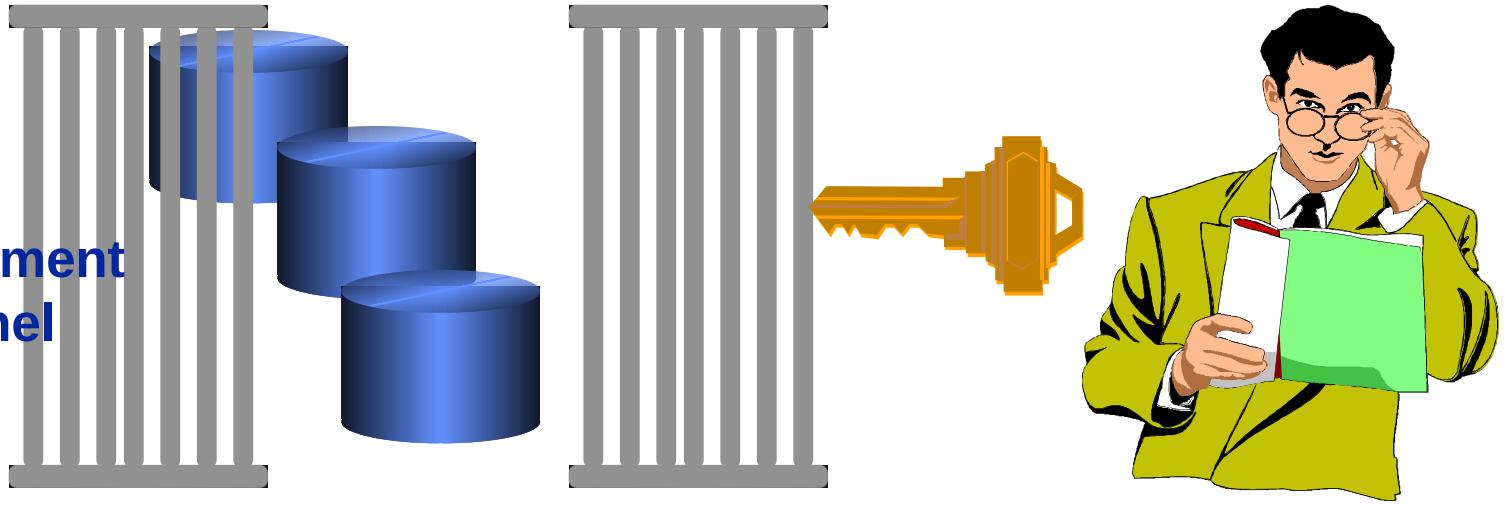


"As enabling as RDBMSs have been, they were never intended to provide powerful functions such as Analysis and Data Synthesis."

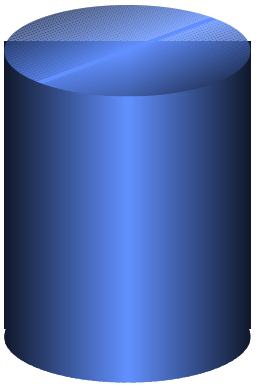
DR. E. F. Codd
Computerworld 1995

Traditional Systems
Liberation of Information

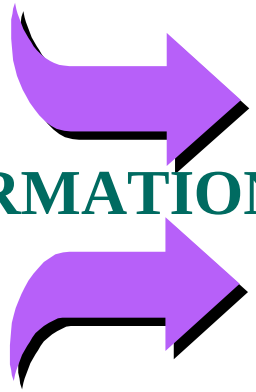
Payroll
Procurement
Personnel



DATA

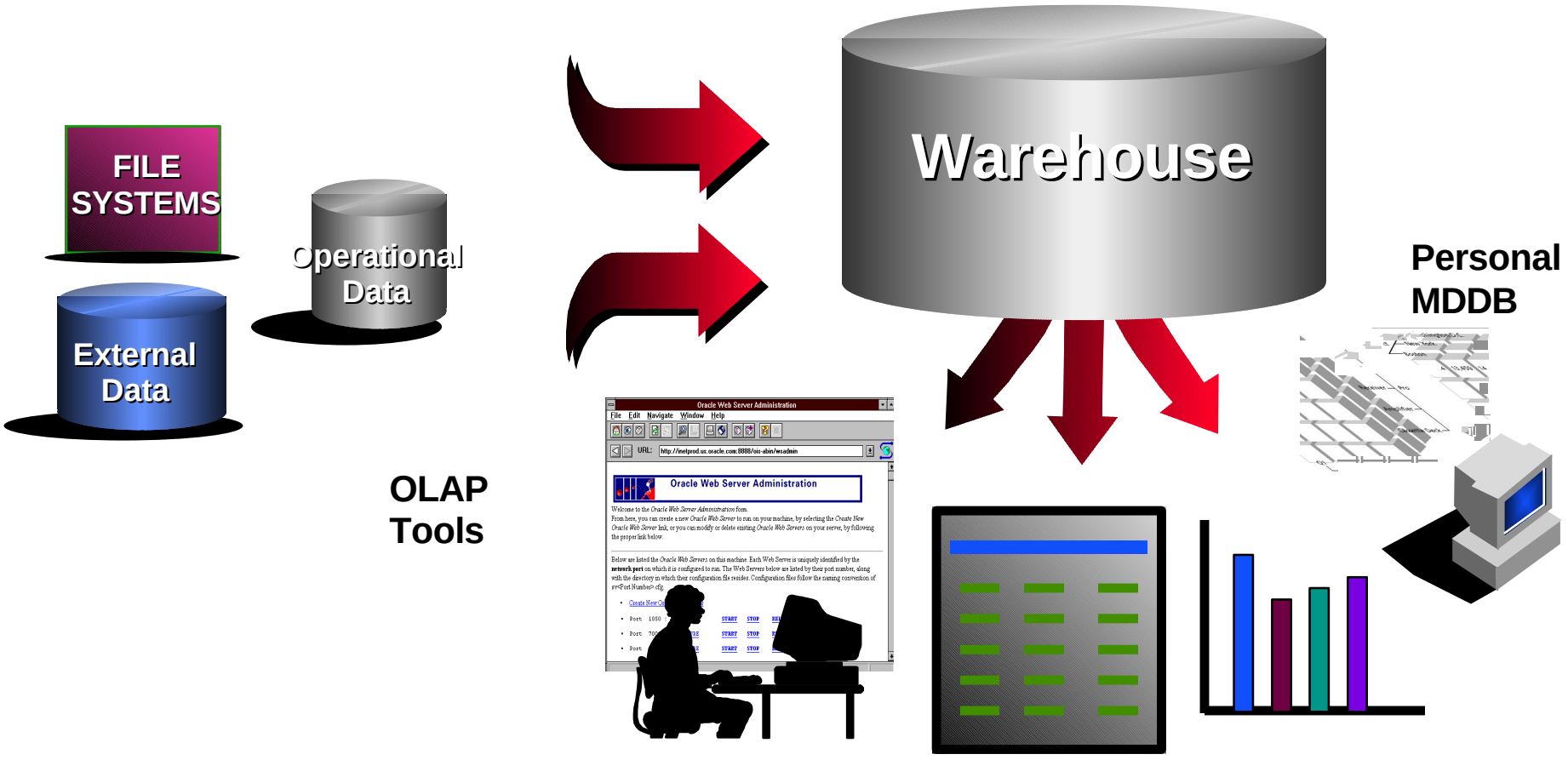


INFORMATION



Traditional Systems
So Much Data, So Little Time

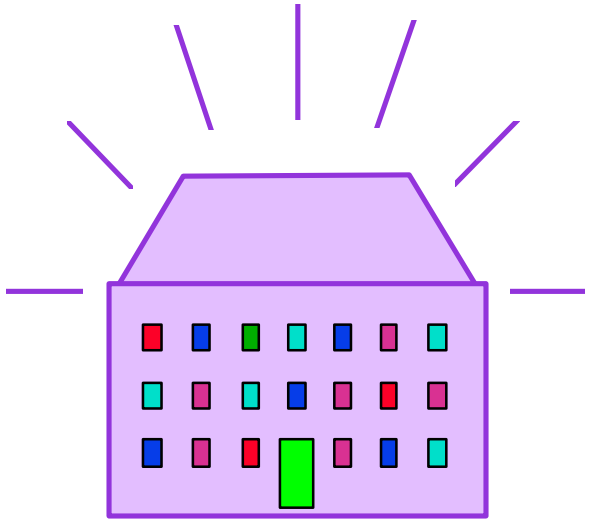
ONLINE ANALYTICAL PROCESSING (OLAP)



What is a Data Warehouse

A collection of integrated, subject-oriented databases designed to support the decision support function, where each unit of data is relevant to some moment in time.

Bill H. Inmon

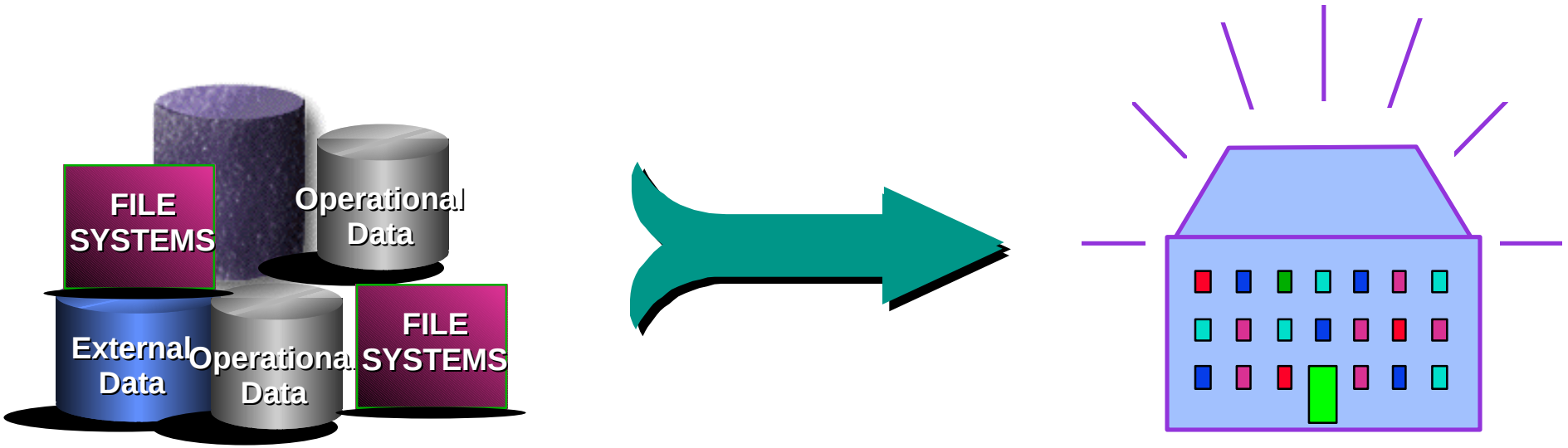


What is a Data Warehouse

The Data Warehouse involves separating decision support functionality into an environment that is removed from the operational, transaction environment

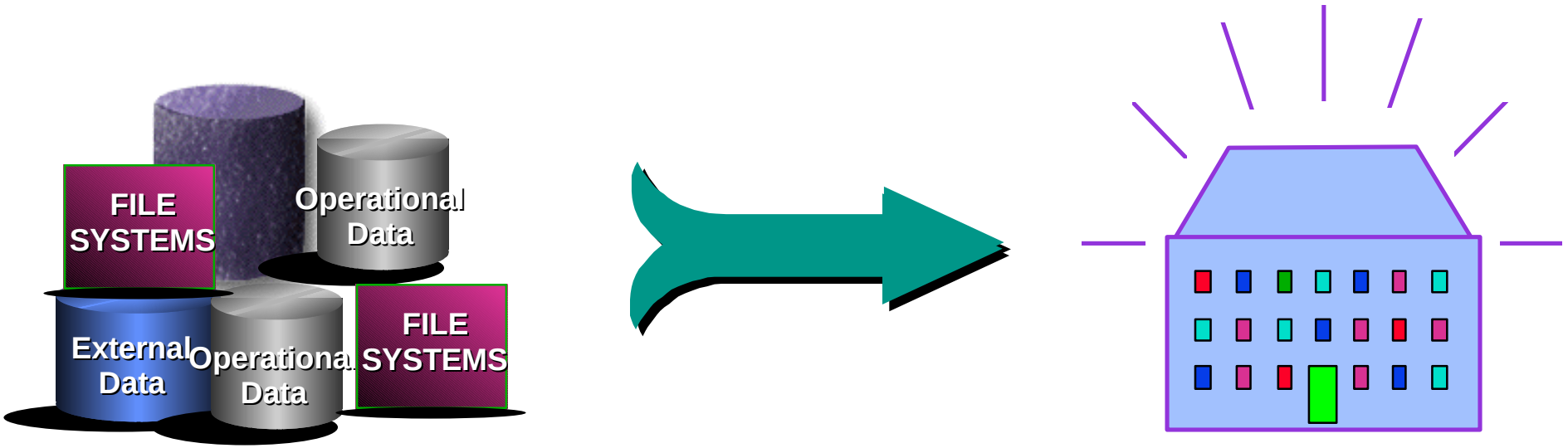
- ***Read-Only (No Update Locks)***
- **Redundant Data (denormalized, few joins)**
- **Indexing (*FAST* Query Performance)**
- **Summarized Data**

Data Warehouse Objectives



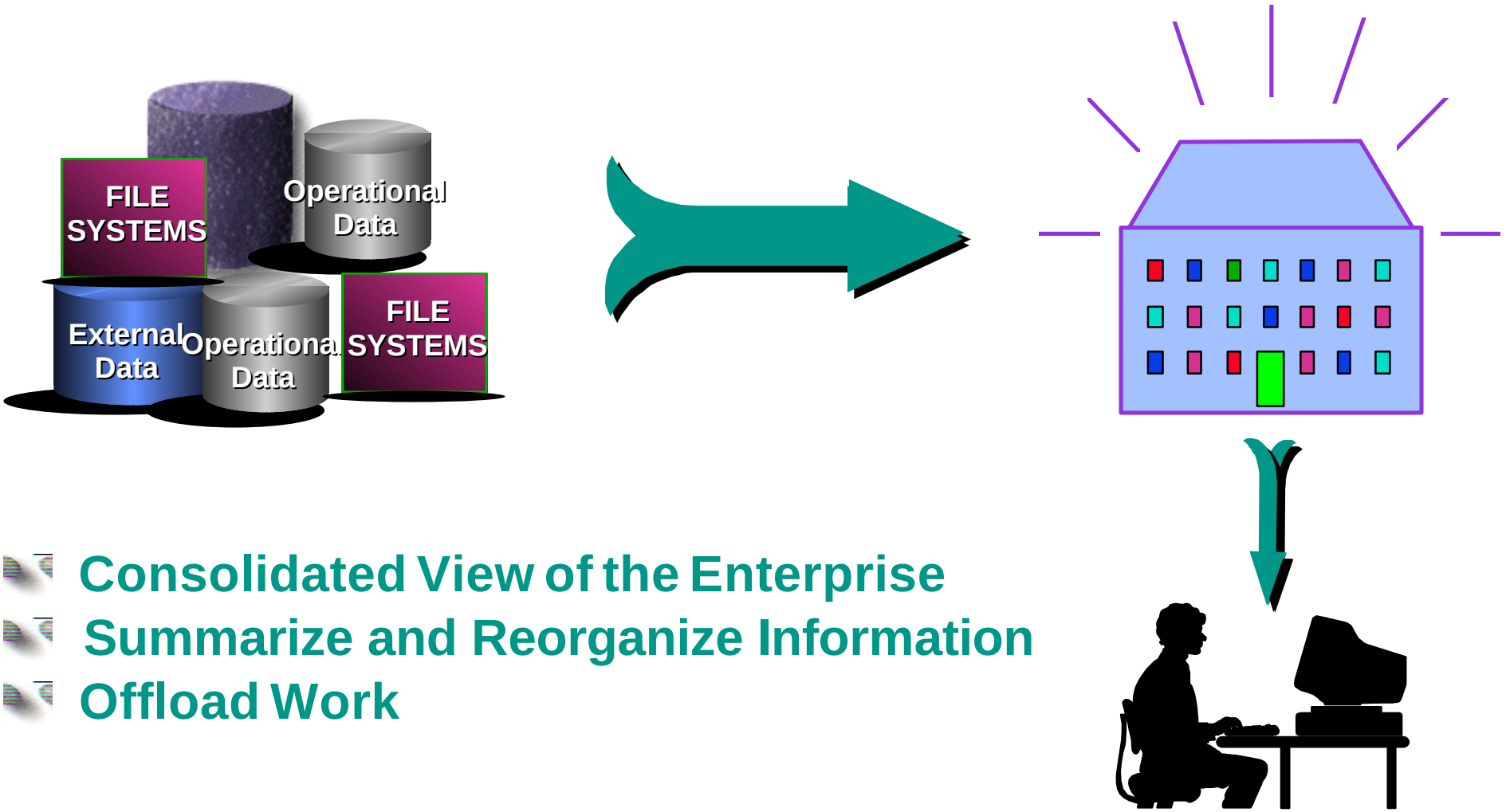
- **Consolidated View of the Enterprise**

Data Warehouse Objectives



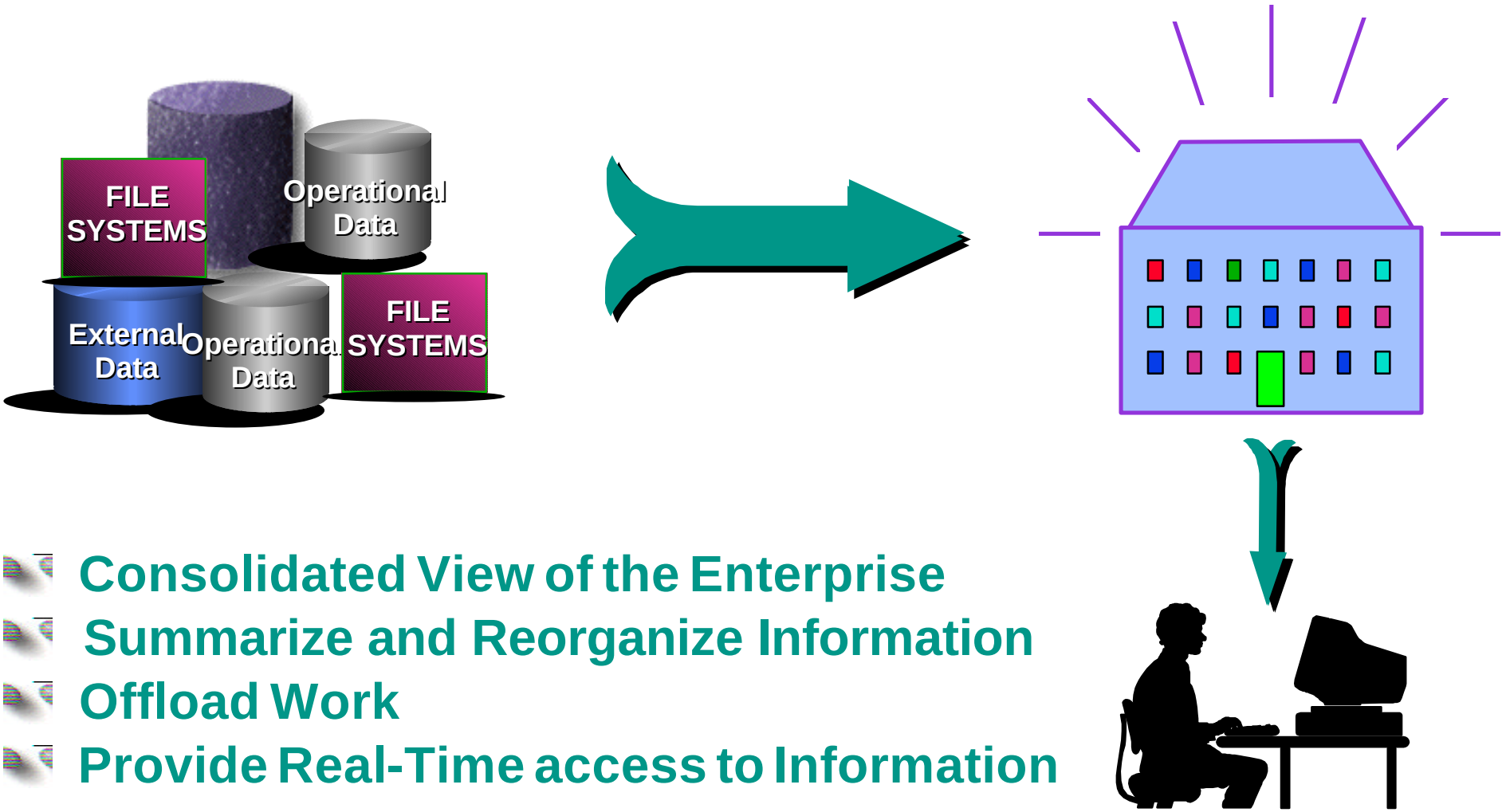
- **Consolidated View of the Enterprise**
- **Summarize and Reorganize Information**

Data Warehouse Objectives



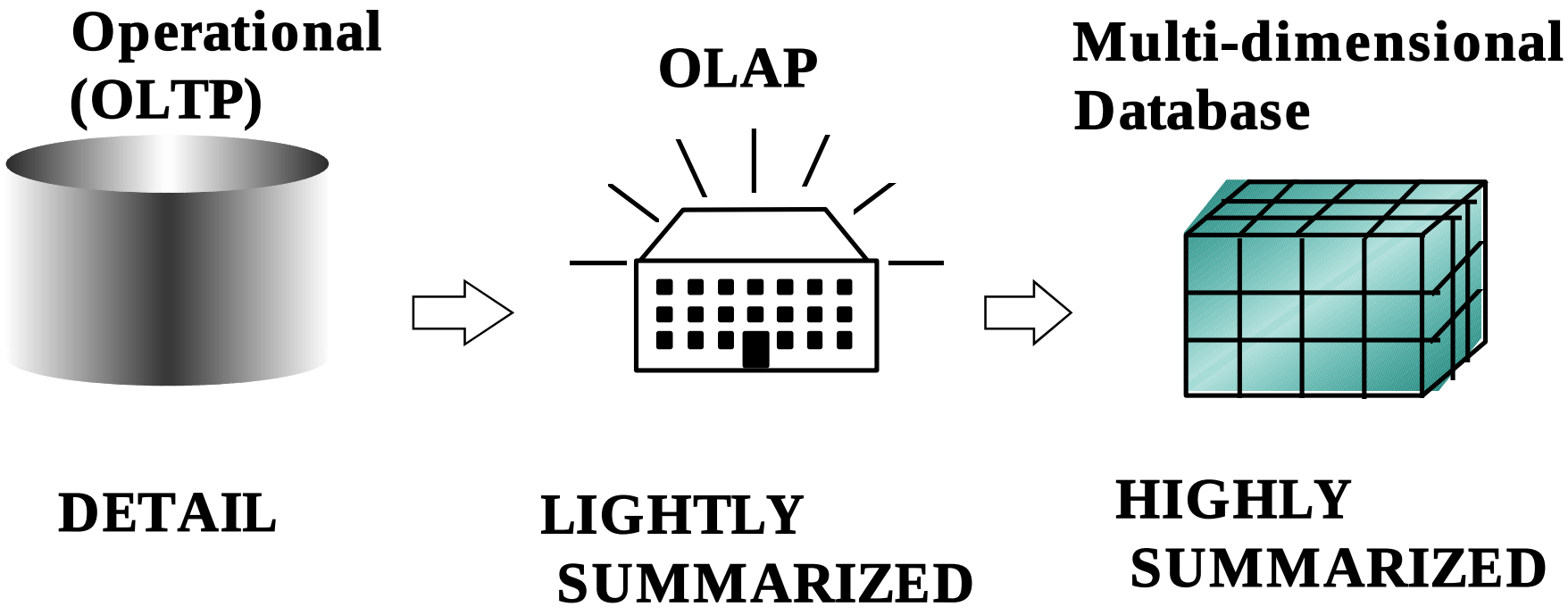
- Consolidated View of the Enterprise
- Summarize and Reorganize Information
- Offload Work

Data Warehouse Objectives



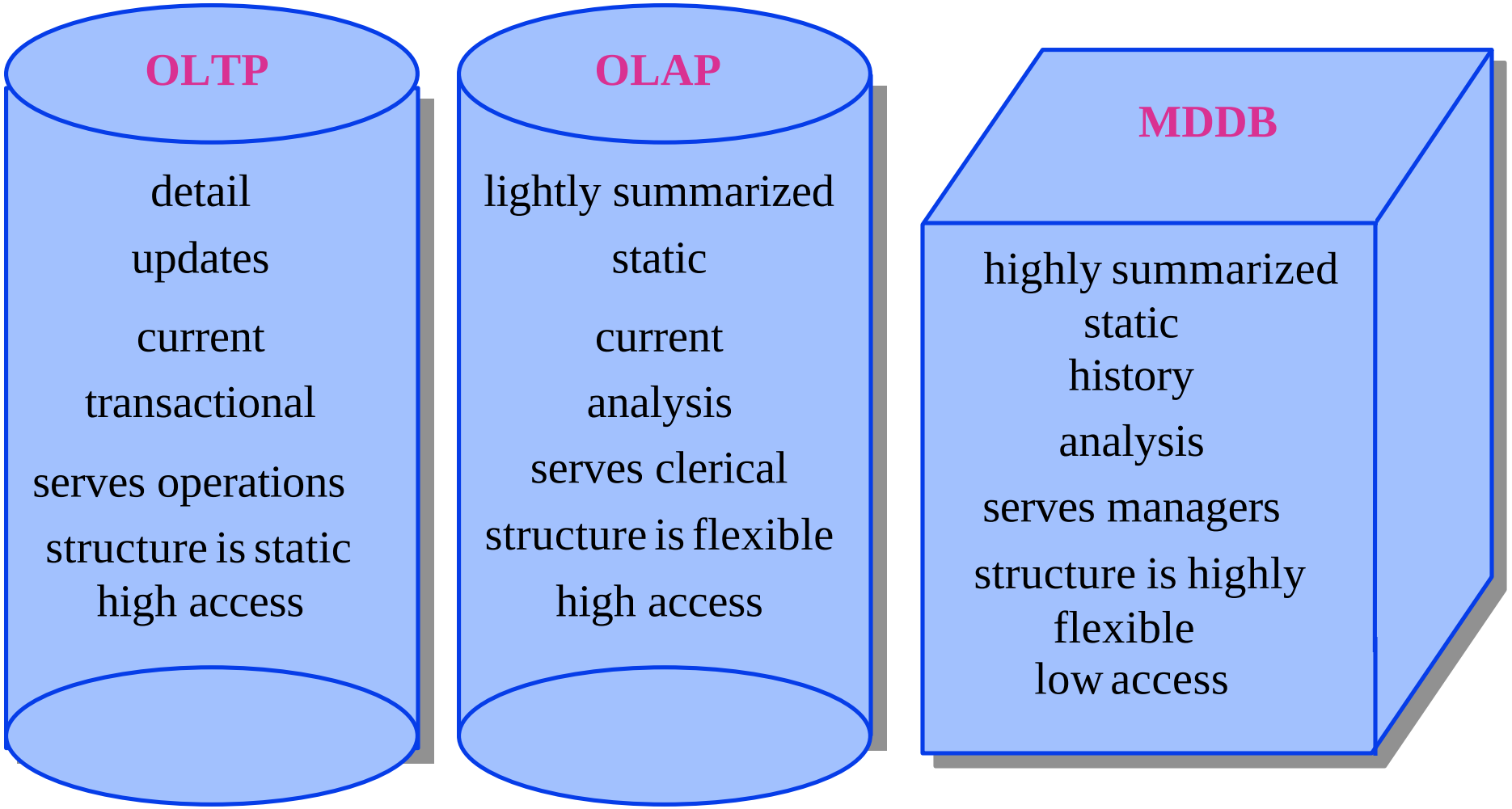
- Consolidated View of the Enterprise
- Summarize and Reorganize Information
- Offload Work
- Provide Real-Time access to Information

The Data Warehouse Architecture

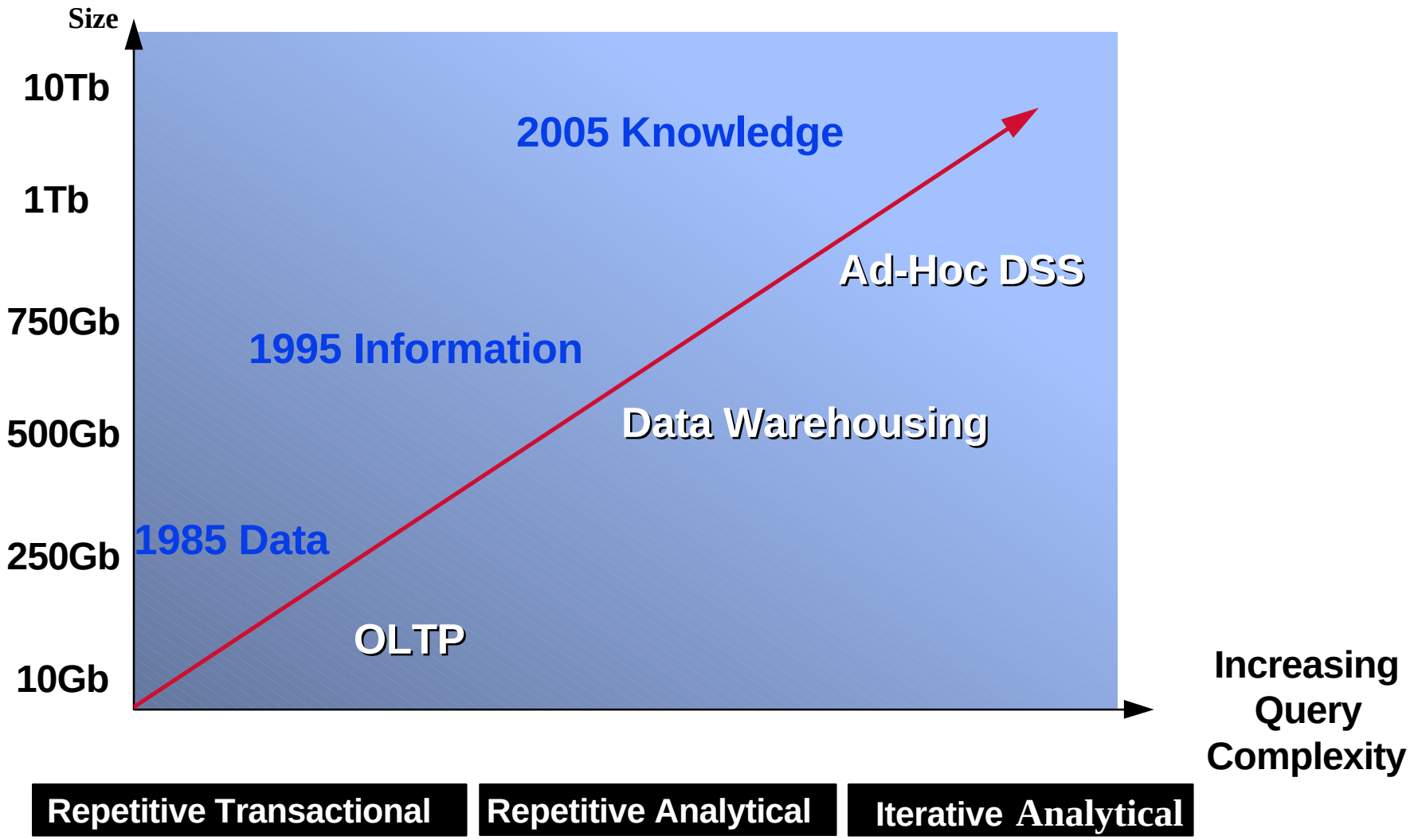


- A single framework cannot support efficient and effective processing of types of data and information.
- The frameworks are designed for optimal processing

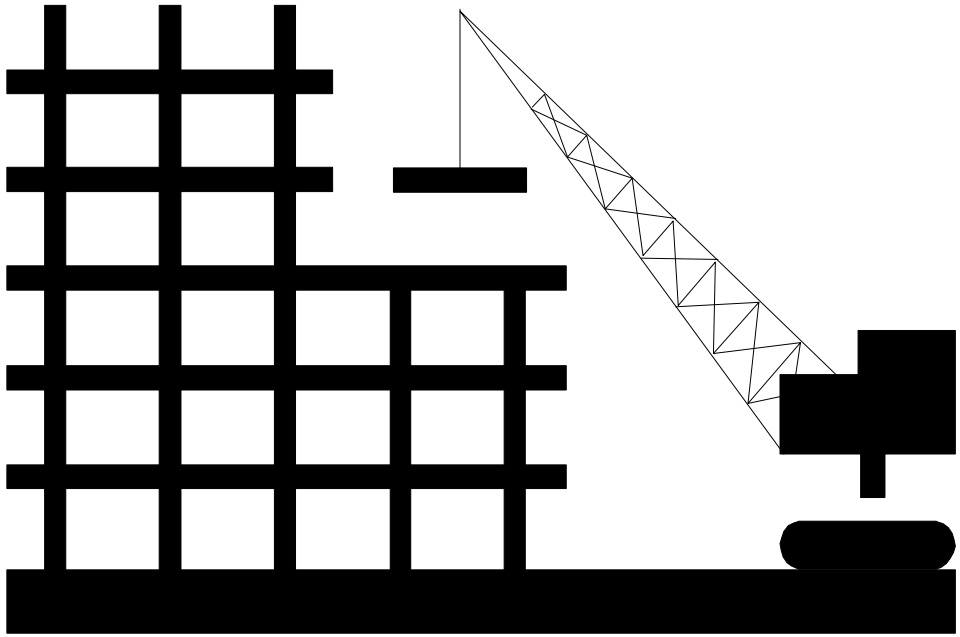
The Data Warehouse Architecture



The Data Warehouse Architecture

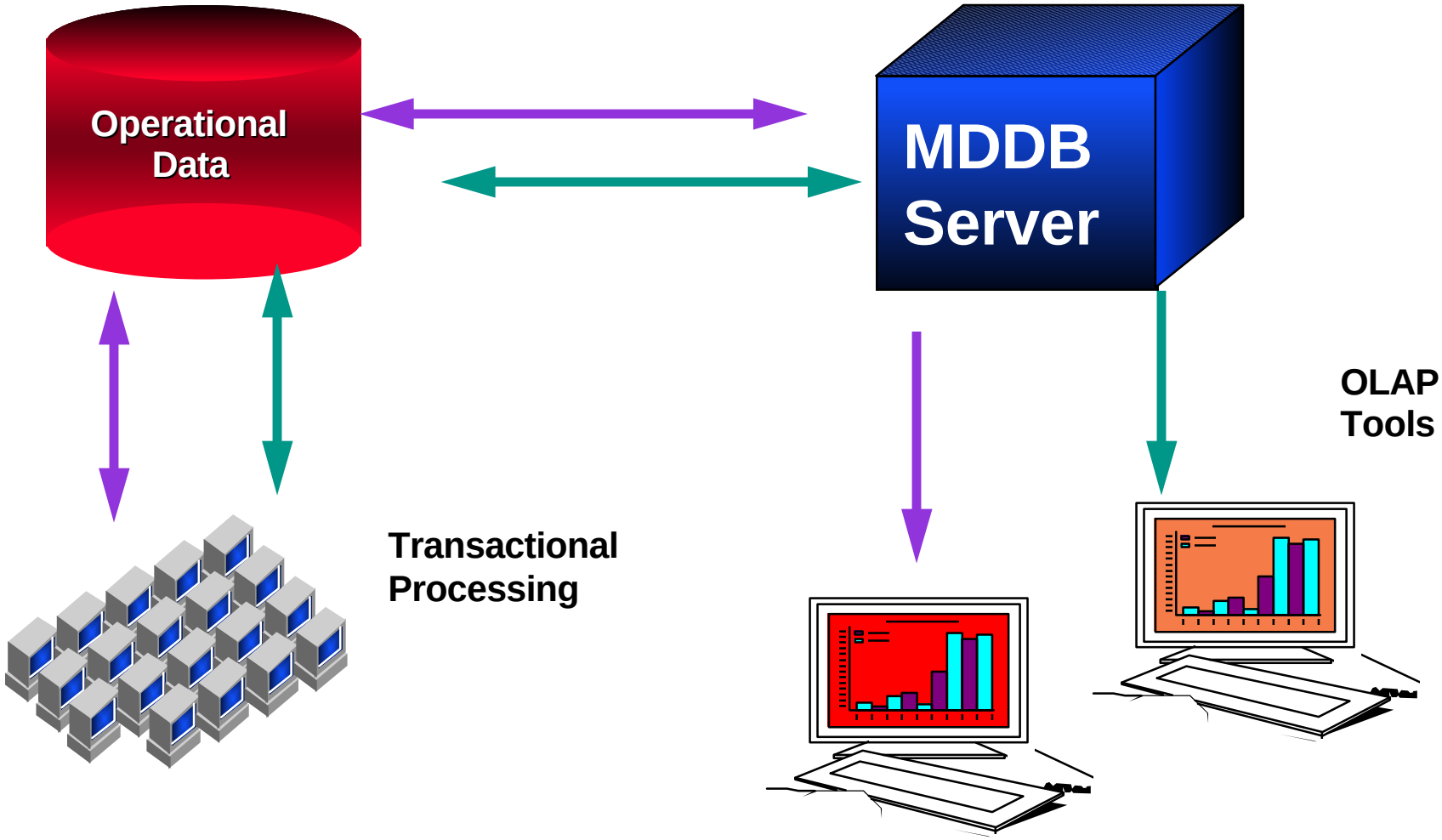


Data Warehousing Architectures

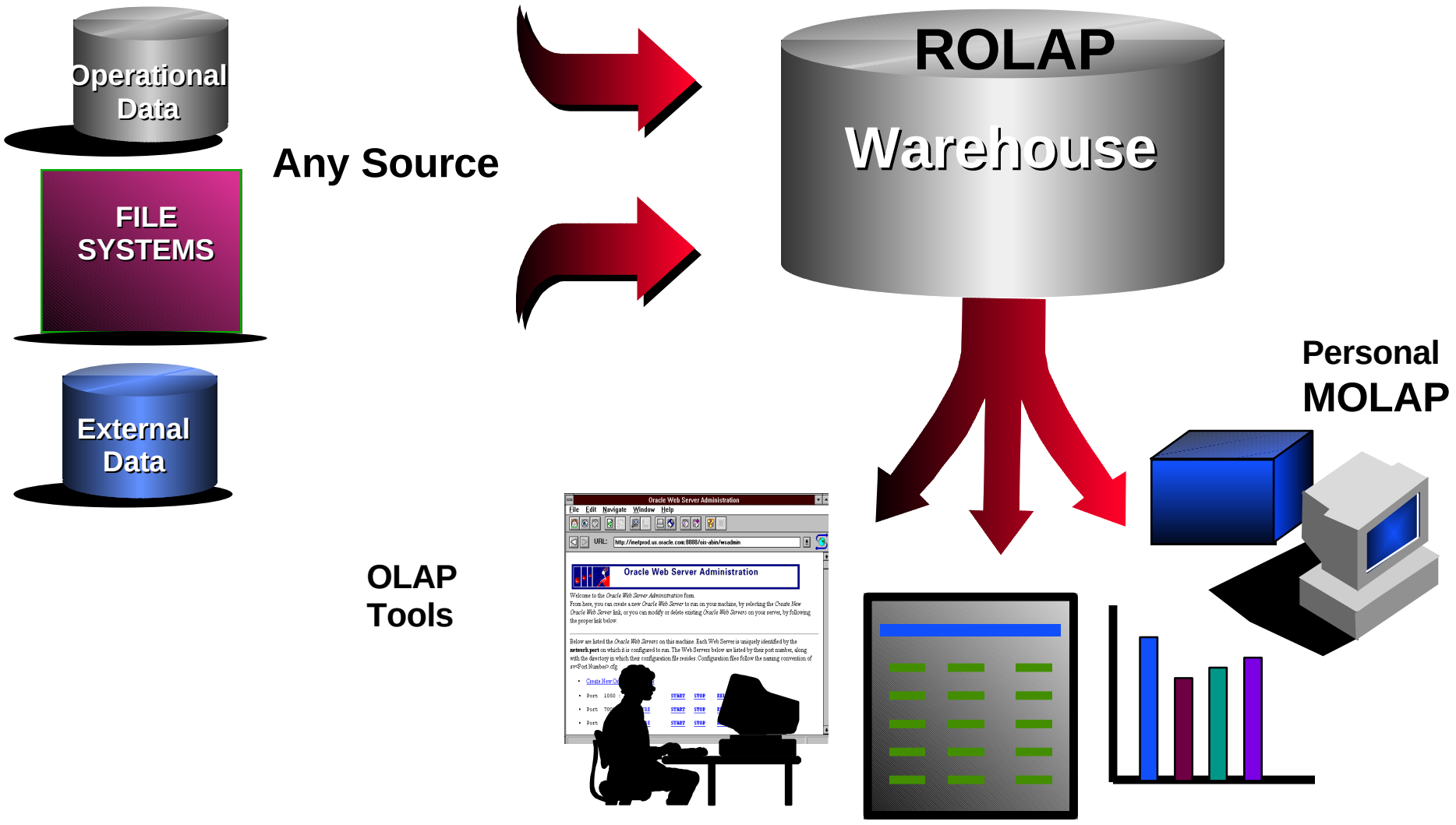


What does a Data Warehouse look like?

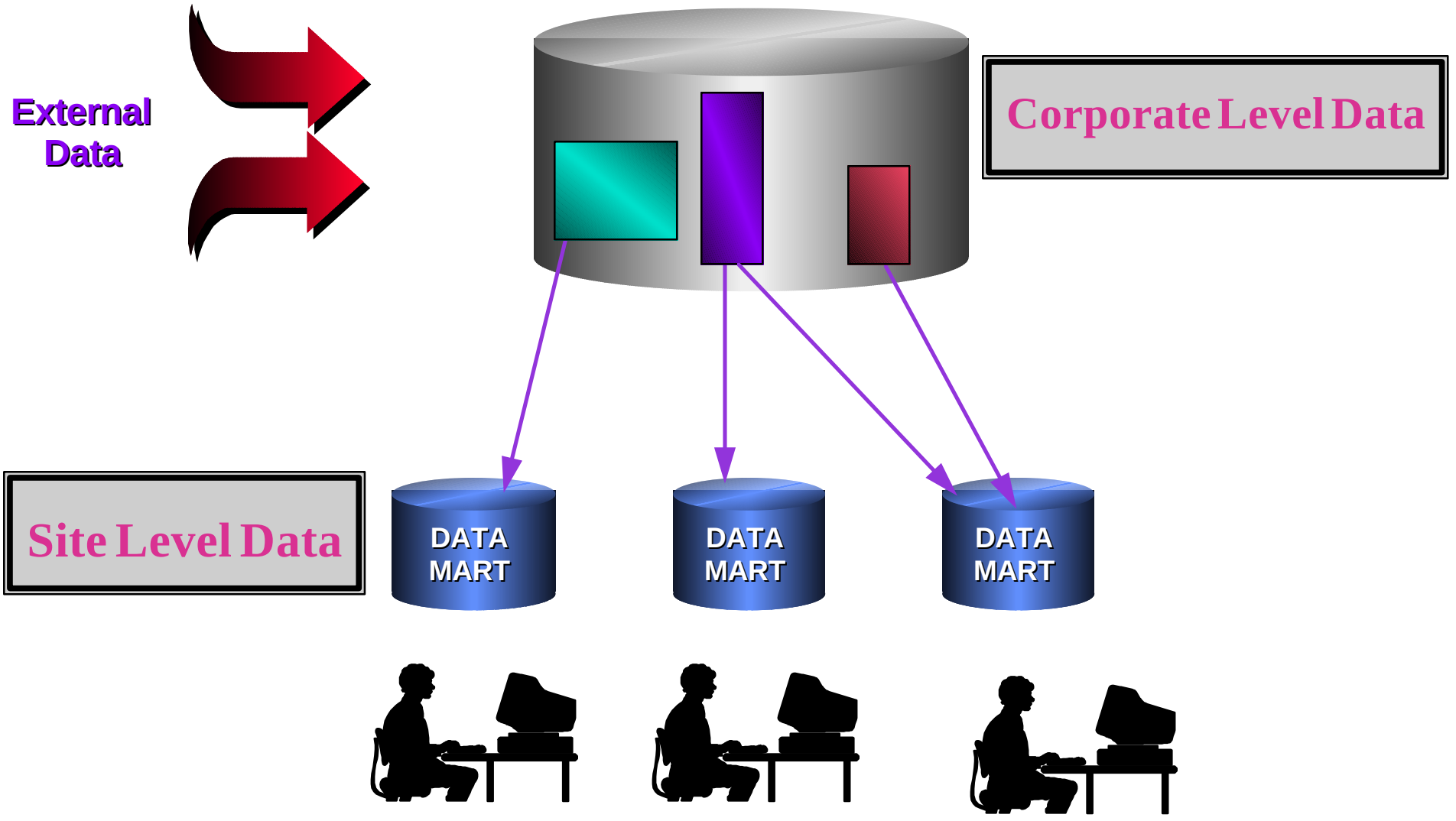
Data Warehousing Architectures



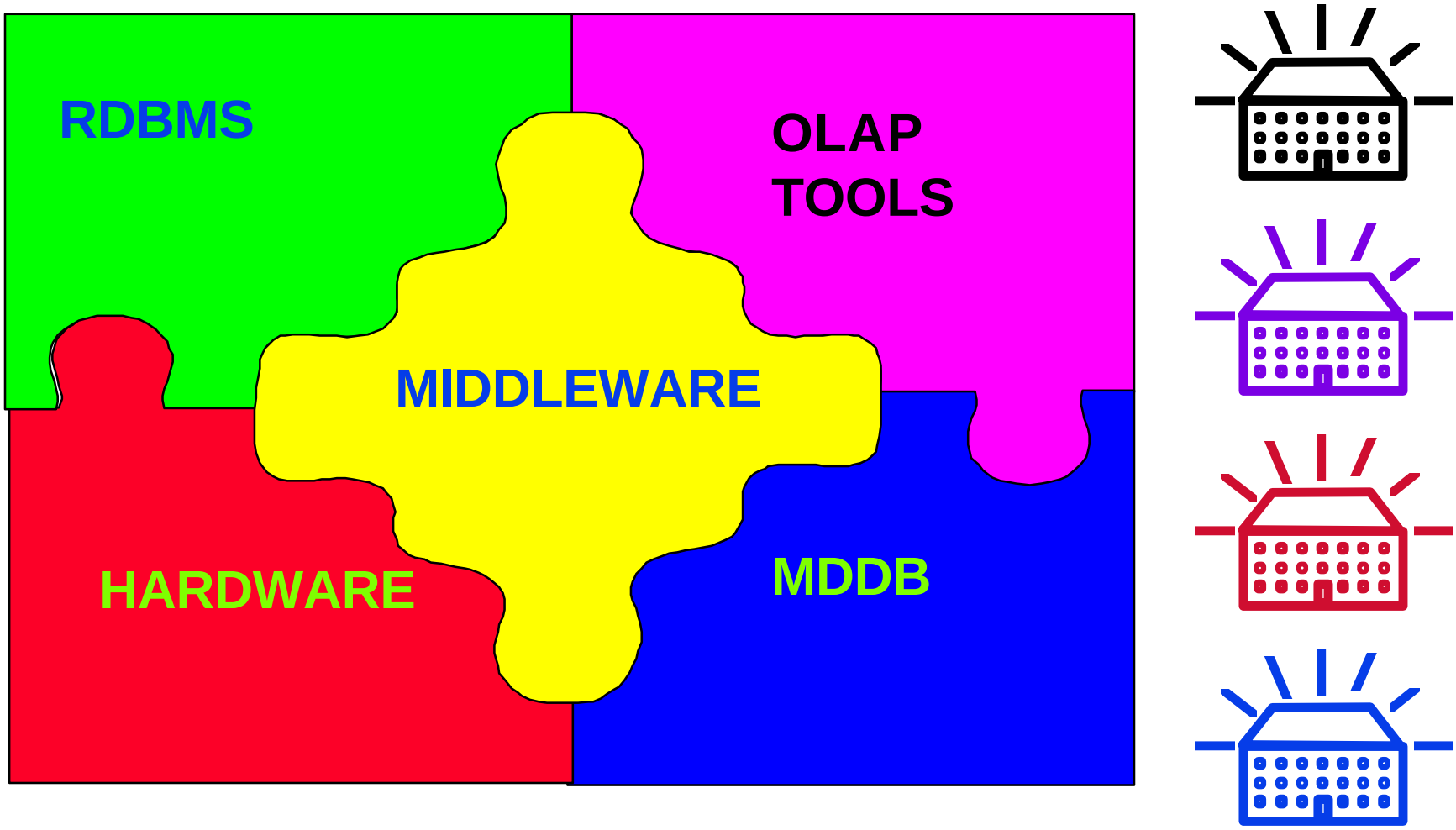
Data Warehousing Architectures



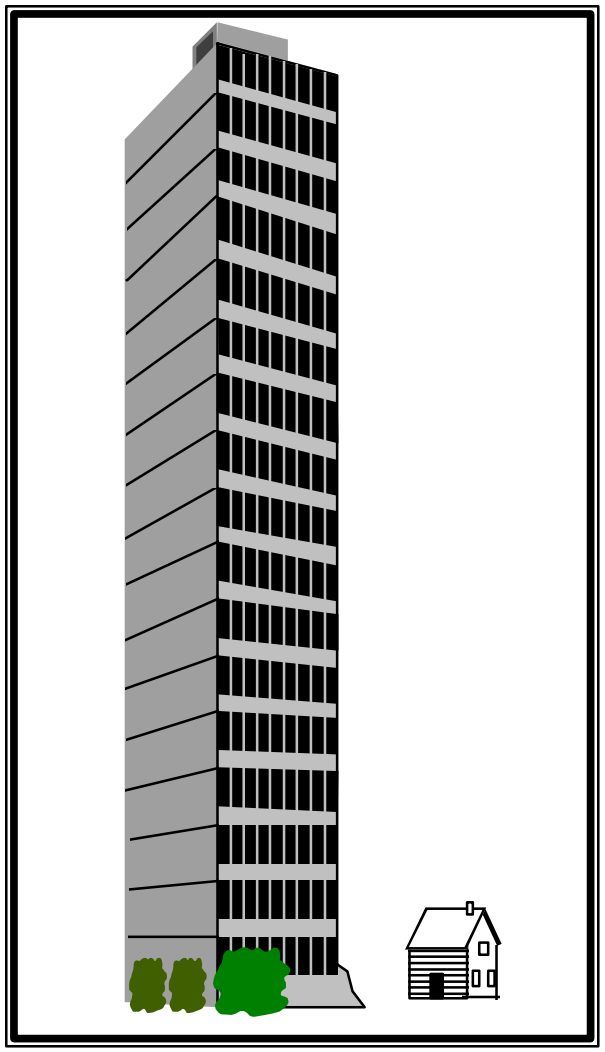
Data Warehousing Architectures



The Technology Puzzle
Putting the Data Warehouse Together



The Technology Puzzle
Putting the Data Warehouse Together

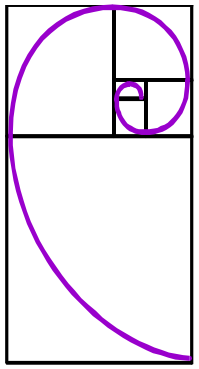


Could the architect who designed your home be qualified to design a building like the World Trade Center?

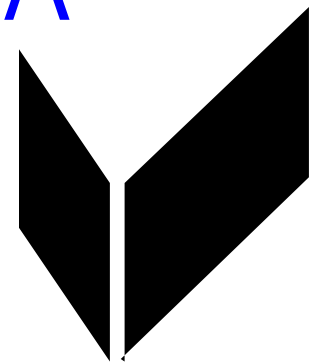
The World Trade Center is 2000 times larger than the average home.

The average Data Warehouse is thousands of times larger than the average database .

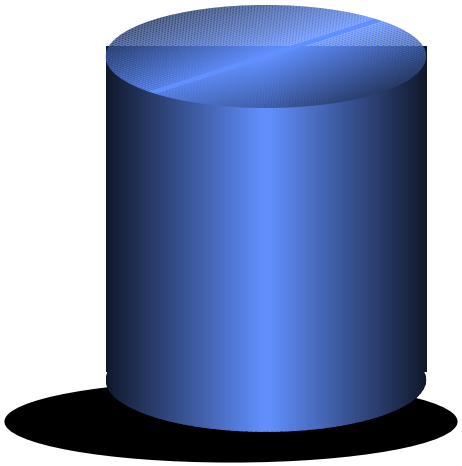
The Technology Puzzle
SOFTWARE

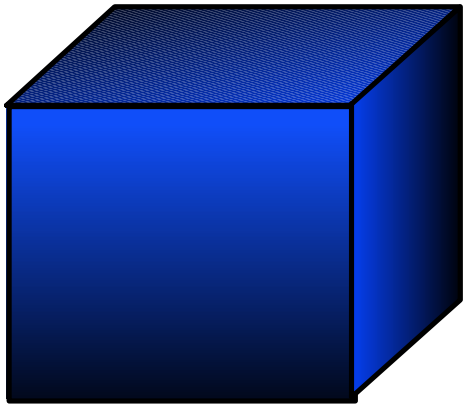


SYBASE



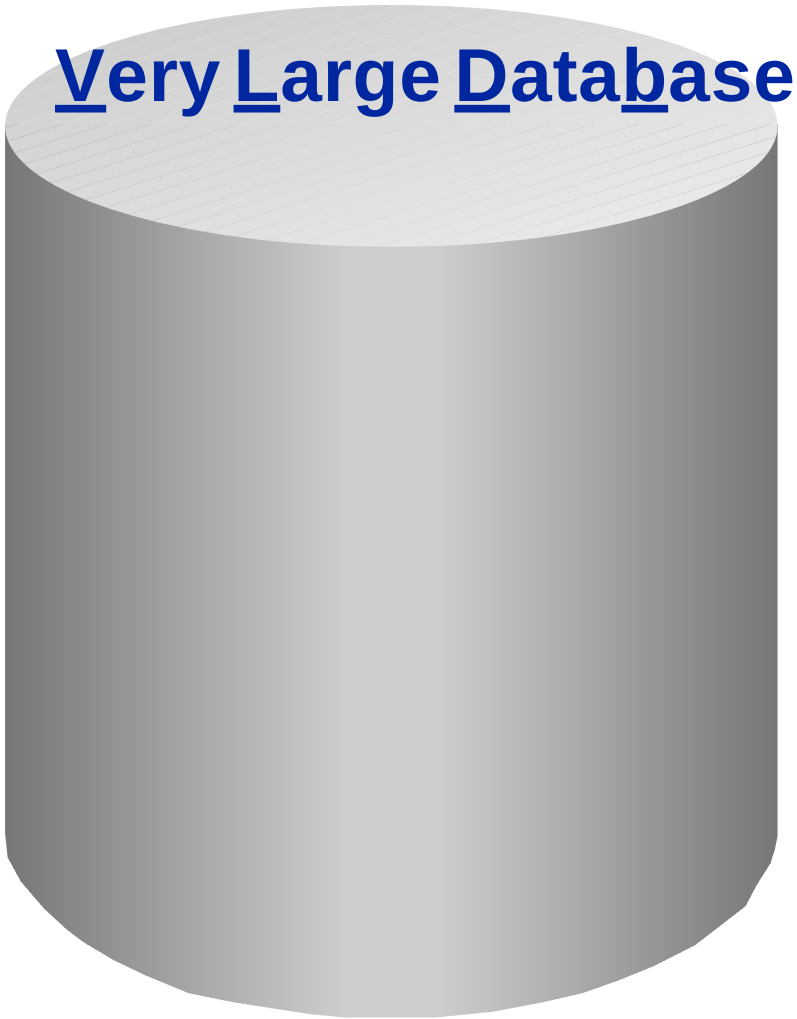
RED BRICK





ORACLE

The Technology Puzzle
VLDB



Very Large Database (VLDB)

- Gigabytes to Terabytes
- High # of transactions
- Scaleable
- Very Large Memory